DOCUMENT RESUME

ED 130 390 95 EA 008 769

AUTHOR Hall, Gene E.
TITLE Phases in the Adoption of Educational Innovations in Teacher Training Institutions.
INSTITUTION Texas Univ., Austin. Research and Development Center for Teacher Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 74
CONTRACT OEC-6-10-108
NOTE 50p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Adoption (Ideas); Change Agents; *Diffusion; *Educational Change; *Educational Innovation; Educational Planning; Higher Education; Universities

ABSTRACT

An attempt has been made to categorize phenomena observed as 20 teacher training institutions have adopted innovations and to extrapolate from these findings key concepts and principles that could form the basis for developing empirically testable hypotheses and could be of some immediate utility to those involved in innovation adoption. The concept of a user system oscillating between times of equilibrium and disequilibrium (which takes place during change) was a beginning point. It was then suggested that there are identifiable phases within the disequilibrium period. These phases are injection, examination, preparation, sampling, spread, and institutionalization. The last section of the paper presents a description of possible adoption strategies that can be employed and a listing of some principles to follow in planning for and managing innovation adoption in teacher training institutions. (Author/IRT)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED130390

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

R + D Center for Teacher Education

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

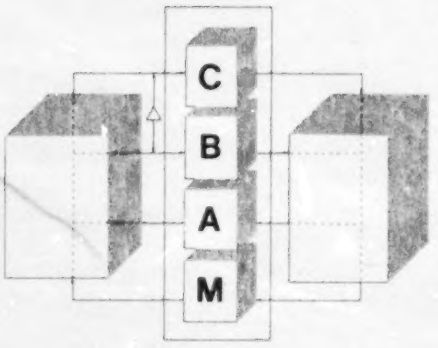
May your children live in a time of change.
—Chinese curse

Change has become a way of life. How change is accomodated and facilitated is the focus of the CBAM Program of UTR&D.

A model of the innovation adoption process, the Concerns-Based Adoption Model (CBAM), has been developed from empirical evidence. The CBAM depicts innovation adoption in educational institutions as a developmental process in which each user of the innovation demonstrates successively higher qualities of use of the innovation. The CBAM also depicts innovation adoption as a process capable of being facilitated by trained adoption agents who pace and personalize their interventions on the basis of the assessed personal needs and motivations of the individual adopters. By being sensitive to the concerns of users and by seeing use of an innovation as a developmental process, adoption agents are expected to be able to reduce the threat change poses to individuals and to increase the likelihood of an educational institution integrating an innovation at a high quality level of use.

This program seeks to validate the CBAM through studies of innovation adoption in schools and universities. Its products will be tested and functional tools for active educational change agents.

EA 008 769



UTR&D

PHASES IN THE ADOPTION OF EDUCATIONAL INNOVATIONS IN TEACHER TRAINING INSTITUTIONS

Gene E. Hall

Copyright 1974, The University of Texas, Austin, Texas

The work reported here has been conducted with the support of National Institute of Education contract OEC 6-10-108. The opinions expressed herein, however, are those of the authors and no endorsement by the National Institute of Education is implied.

PHASES IN THE ADOPTION OF EDUCATIONAL INNOVATIONS IN TEACHER TRAINING INSTITUTIONS

Gene E. Hall

"Innovation adoption in institutions is a process, not an event."

O. H. Bown

The stereotype picture of schools and colleges is one of continual change. Trying out new ideas appears to be the standard way of life. "Why, they are doing math in the third grade now that I did not do until I was in high school!" "You just drive by that campus now and it even looks different than when we were there. The way the kids are dressed, the new buildings..."

Unfortunately, the available research and documentation indicates that while the "kids" are changing in their looks, values, and so forth, what goes on in the classroom has not really changed all that fast. Mort and Cornell (1941) told us almost 30 years ago that an average of 50 years passes before an educational innovation spreads to most schools. This certainly tells us that schools were not hot beds of change in the past.

Although a disappointingly small amount of research on the diffusion of more recent educational innovations has been reported, there appears to be little data that suggest that Mort and Cornell's earlier extrapolations have shifted. There may be more early adopters, but over the long haul their findings appear to be holding. Anderson and Horn (1972) for example, have reported on their effort to implement in Colorado the new elementary science curricula developed in the 1960's with NSF support. The diffusion plan they employed resulted in their being able to get school districts, including more than 60% of the student population of Colorado, to introduce and expand their

use of the new elementary science curricula over a three year period. The discouraging part of their report is that these school districts constitute only 18 of the 181 districts in the state. By the time that most school districts implement one of these innovations, Mort and Cornell's findings will more than likely still hold.

However well we might have been able to cope with problems engendered by rigidity in our institutions in the past, the present and the future demands of our society require that educational institutions adopt new ideas quickly, use them effectively, and that this be done with a minimum of stress and strain. Alan Toffler (1970) has recently brought this point home to the public in his popular book, Future Shock. Many questions related to how to meet the demand he has pointed to remain unanswered. Many more questions have partial answers that are constructed upon little or no empirical base and very little, if any, rational basis. Despite such fragile foundations, these are rapidly becoming "the way we've always done it."

One notable weakness in our prescriptions for change in the schools lies in the fact that the research on change has been done in areas other than schooling, such as with farmers adopting hybrid corn, doctors adopting new drugs, or with marketing/advertising programs. Much of this available research and experience appears to be applicable to educational institutions, but caution must be taken in direct transfer of these results since there are some basic differences. For example, the adopter is no longer an individual farmer or doctor who makes a decision to try out an innovation and then personally uses it, but instead is a school system or college where there are many potential individual users among the faculty and decisions are made in a hierarchy of administrators. In educational institutions, the individual users of the innovation are not necessarily those who make the decision to try it out in the first place. Similarly, if an educator decides to try out an

innovation on his own, he may not receive sanction or support from his superiors or even his peers. In fact, his associates might actively campaign against his "rocking the boat." In summary then, in comparison with the doctor who decides to try a new drug, the innovation adoption process in educational institutions is much more complex due to the number of people who are directly and indirectly involved in the decision and implementation.

Confronted as we are at this moment in history with the combined press for change and the inertia of a complex problem, we need descriptive and quantitative information about innovation adoption and the concomitant changes this process induces in educational institutions. With recent influxes of federal money and the social pressures for change, educational innovation has become a fairly widespread process. But in proceeds piecemeal with relatively little basis in real knowledge about the mechanisms of the process or organization of what is known about the process into a form that is useful in expediting it. Attempts to identify regularities, patterns, or common characteristics of the process across institutions is sorely needed. Institutions presently proceed as if they were engaged in a wholly idiosyncratic experience. If regularities or patterns can be identified, then planning for change could be handled much more easily and efficiently.

As part of the work of the Inter-Institutional Program of the Research and Development Center for Teacher Education at The University of Texas at Austin, an extensive documentation file has been maintained of the events and processes that have taken place as some twenty teacher training institutions have adopted teacher-education related innovations. A set of developmental phases of innovation adoption in educational institutions has been identified out of this documentation effort in combination with other evidence out of the experiences of the author and his colleagues and from a formal series of intensive interviews with six experienced adoption agents.

These phases, which are hypothesized to be characteristic of innovation adoption in educational institutions and, more specifically, of teacher training institutions, will be identified and described in this paper. Implications for the planning of change will be suggested in the form of a set of guidelines for planned innovation adoption in educational institutions based on the identified phases. The guidelines should be of immediate use to those involved in planning innovation adoption and the phases and guidelines are both expected to be useful to researchers.

Inter/Intra Change Agent Semantics

Before proceeding further, a brief discussion and clarification of semantics is needed. The theoretical and research base of what can loosely be called the study of "change" is accumulating at an ever-increasing rate. The number of researchers and agents involved with aspects of change with various target populations is much larger than most people realize. Change researchers and change agents are at work under such diverse labels as communication of innovation, innovation, change, educational change, rural sociology, diffusion, technology transfer, organizational development, knowledge utilization, dissemination, management of change, marketing, and others. Their published works are in every kind of journal imaginable.* The content expertise and the product they are working with may be relatively simple, such as, introduction of a new hybrid corn seed to farmers who are already sophisticated in the use of hybrid corn, or something as complex as transferring petrochemical technology to developing countries. Unfortunately, communication between these diverse and wide ranging experts does not appear

---

*Miles (1964) has constructed a figure in which he compares the various disciplines, methods and findings of these diverse efforts. (p. 301)

to be all that clear or frequent. The reasons are many, obviously including the vast diversity of the innovations, target populations, and areas of professional expertise. One additional reason for lack of communication among the "communication"/"change" experts has to be the inconsistencies in use of terminology and concepts.

Due to the diversity of background and work of the researchers, the established terminology has different meanings for different academic tribes. The transfer of ideas with comprehension within the field of change is terribly difficult, if not impossible. It is important for the communicability of this paper that the professional terminology be clarified and defined as it will be used herein.

Adoption

Take the term "adoption." The following is a sample of the published definitions of adoption.

> "... a decision to make full use of a new idea as the best course of action available." (Rogers & Shoemaker, 1971, p. 26)
>
> "... the full-scale use of an innovation ..." (Miles, 1964, pp. 302-03)
>
> A stage in the adoption process: "In the 'adoption' stage, the results of the trial are weighed and considered and, on the basis of this post-trial evaluation, the decision is made to adopt (or reject) the innovation." (Havelock, 1973, p. 114)
>
> "Adoption refers to the use and continued use of a new item; it involves commitment rather than purchase trial." (Robertson, 1971, p. 32)
>
> "Adoption is an intellectual process through which an individual passes from first hearing about an innovation to final adoption. It can have five stages: awareness, interest, evaluation, trial, and adoption." (Mueller, 1971, p. 54)

As can be seen from this small sampling, the multiple meanings, sometimes conflicting, sometimes inconsistent definitions of adoption can easily lead to miscomprehension. Adoption is used both as a noun and a verb. The

term is used as a decision point and as an intellectual process. Some use the term as a label for the final stage in a process, while Havelock (1973, p. 114) adds a stage named "integration" following the adoption decision point to label the time when use of the innovation becomes a part of the day-to-day routine.

Adoption Process

> "The adoption process refers to the mental sequence of stages through which the consumer progresses from first awareness of the item to final acceptance." (Robertson, 1971, p. 32)

The North Central Regional Rural Sociology Subcommittee (1955) proposed an adoption process that consisted of five stages: (1) awareness stage, (2) interest stage, (3) evaluation stage, (4) trial stage, (5) adoption stage.

Rogers and Shoemaker propose a more elaborate "innovation-decision" process,

> "that represents the mental process through which an individual passes from the first knowledge of an innovation to a decision to adopt or reject and to confirmation of this decision." (Rogers and Shoemaker, 1971, p. 99)

Havelock (1973, pp. 113-114) summarizes a six phase adoption process consisting of (a) awareness, (b) interest, (c) evaluation, (d) trial, (e) adoption, (f) integration.

> "Diffusion is the process by which an innovation spreads. The diffusion process is the spread of a new idea from its source of invention or creation to its ultimate users or adopters. Thus diffusion entails the communication or dissemination of an idea, and culminates in its adoption by individuals." (Eichholz and Rogers, in Miles, 1964, p. 299)

Innovation

Innovation is

> "... a species of the genus 'change.' Generally speaking, it seems useful to define an innovation as a deliberate, novel, specific

change, which is thought to be more efficacious in accomplishing the goals of a system." (Miles, 1964, p. 14)

"Any change which represents something new to the people being changed. For example, a kindergarten is an 'innovation' to a school system which has not had one heretofore." (Havelock, 1973, p. 4)

"The critical factor in defining a new product should be its effect upon established patterns of consumption. A continuum may be proposed for classifying new products by how continuous or discontinuous their effects are on established consumption patterns. Or it may be convenient to think in terms of (1) continuous innovations, (2) dynamically continuous innovations, and (3) discontinuous innovations." (Robertson, 1971, p. 7)

"1: the introduction of something new 2: a new idea, method, or device." (Webster's Seventh New Collegiate Dictionary, 1970)

Change

"'Change' is very nearly an undefined, primitive term. It generally implies that between time 1 and time 2 some noticeable alteration has taken place in something." (Miles, 1964, p. 17)

Miles (1964, p. 2) distinguishes between the content of the desired change and change process.

"Any significant alteration in the status quo." (Havelock, 1973, p. 4)

Mueller (1971) appears to define change as "to innovate."

In management and "business" organizational theories, change is a basic word but not isolated out for definition.

"to make different in some particular; to replace with another." (Webster's Seventh New Collegiate Dictionary, 1970)

Diffusion

"These concepts (adoption and adoption process) should be clearly distinguished from diffusion, or the diffusion process, which refers to the spread of an item from producer to consumer. The adoption process is an individual phenomena, whereas the diffusion process is a social phenomenon." (Robertson, T.S. 1971, p. 32)

"The adoption process differs from diffusion in that adoption is the acceptance of the new idea by one individual, while diffusion is the spread of new ideas in the social system, or the spread of innovations between societies." (Mueller, 1971, p. 54)

> "This process (the innovation-decision process) should be distinguished from the diffusion process by which new ideas are communicated to the members of a social system. The major difference between the two processes is that diffusion occurs among the units in a social system, whereas innovation decision making takes place within the mind of an individual." (Rogers and Shoemaker, 1971, p. 99)

> "1: the action of diffusing or state of being diffused 2: the process whereby particles of liquids, gases, or solids intermingle as the result of their spontaneous movement..." (Webster's Seventh New Collegiate Dictionary, 1970)

As still another example, many authors apparently use the term "dissemination" interchangeably with the term "diffusion," while some attempt a distinction. Recently, Havelock (1971) conducted an extensive literature search in which he attempted to use the above terms and some others as the key terms for identifying relevant papers. He ended up labeling the list "an ill-fated list of key terms" (pp. 1-5). His staff found that it was impossible to retrieve complete and relevant information based on these terms. They had to develop a "search guide" or model in order to systematically explore the literature. Paradoxically, even now, the literature continues to be written using these terms with little definition and certainly no standardization of meaning.

The reader will need to keep in mind our frame of reference. We are studying educational institutions, more specifically schools and teacher training institutions. Our frame of reference is one that sees formal organizations as consisting of various overlapping formal and informal groups that are organized to deliver a service or produce a product. We see these groups as being composed of individuals. The primary focus is on the individual working as a member of the institution with concurrent membership in various groups. This is in contrast to a focus on the group as the unit of study or unit of change in an institution. This composit frame of reference necessitates our defining terms in certain ways.

For our work, the following is a list of key terms and definitions. We hope that our definitions will not be completely idiosyncratic and that the reader will be able to adapt his thinking to these definitions and think about our ideas and work rather than becoming confused over whether we are talking about innovation, change, or adoption -- or is it adaption?

Adoption: A generic term that encompasses the individual adoption process and refers to the phases, decision points, events, and processes that both individuals and institutions as a whole experience as they initiate and develop extensive high-level use of an innovation.

Adoption Agent: A change agent who is a specialist in use of an innovation and in developing high-quality use of the innovation in others, who works closely over a period of time with the individuals and groups within a user system to facilitate their developing extensive high-quality use of the innovation.

Change: Between time 1 and time 2, a perceivable shift or difference occurs. A detectable alteration occurs in the behavior of individuals and/or institutions.

Diffusion: The natural spread of use of an innovation across user systems. This is spread between institutions where there is an absence of deliberate interventions and specialized resources designed specifically to enhance spread of use of the innovation.

Dissemination: Planned and deliberate spreading of use of an innovation across user systems. Specialized resources and interventions are designed and utilized to enhance spread of use of the innovation.

Individual Adoption Process: Havelock's (1973, pp. 113-114) six phases that an individual user passes through as he becomes committed to and uses

regularly an innovation -- (a) Awareness, (b) Interest, (c) Evaluation, (d) Trial, (e) Adoption, (f) Integration.

Innovation: A specific product, concept or process that is novel to most or all of the individuals within a user system. The individuals would not possess the skill and capability to use the "innovation" at the outset.

Institutionalization: Within a user system, sufficient capability, extensiveness and high-level use of the innovation has been attained so that without further, extra or unusual support, regular use of the innovation will continue.

User System: Normally an intact formal organization or institution such as school or college of education; or a school system or university. The limits of a user system are defined by the outermost boundaries of effects if innovation adoption were to become as excensive as is reasonable to expect within a given institutional setting.

Viewing Adoption As A Developmental Process

Several researchers have conceptualized phases that individuals appear to progress through from first perceiving a discomfort or having identified a need to the time when the individual has integrated use of an innovation that satisfies the need into his regular routine. As with any model, each of these have certain strengths and certain weaknesses. Although the thrust of our present research is the study of innovation adoption in educational institutions, much that has been written about individuals adopting new products and procedures is directly relevant and supportive of our own analyses. Since Havelock (1971), Maguire (1970), and Rogers and Shoemaker (1971) have published comprehensive reviews and syntheses of the literature, prolonged discussion of the literature is not necessary here. Following are brief descriptions of the principle models that are found in these reviews.

The "Adoption Process"

In 1955, the North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices proposed a five-stage model named the "adoption process." The following is how Rogers and Shoemaker (1971) have summarized these stages:

> "1. Awareness stage. The individual learns of the existence of the new idea but lacks information about it.
>
> "2. Interest stage. The individual develops interest in the innovation and seeks additional information about it.
>
> "3. Evaluation stage. The individual makes mental application of the new idea to his present and anticipated future situation and decides whether or not to try it.
>
> "4. Trial stage. The individual actually applies the new idea on a small scale in order to determine its utility in his own situation.
>
> "5. Adoption stage. The individual uses the new idea continuously on a full scale. [pp. 100-101]"

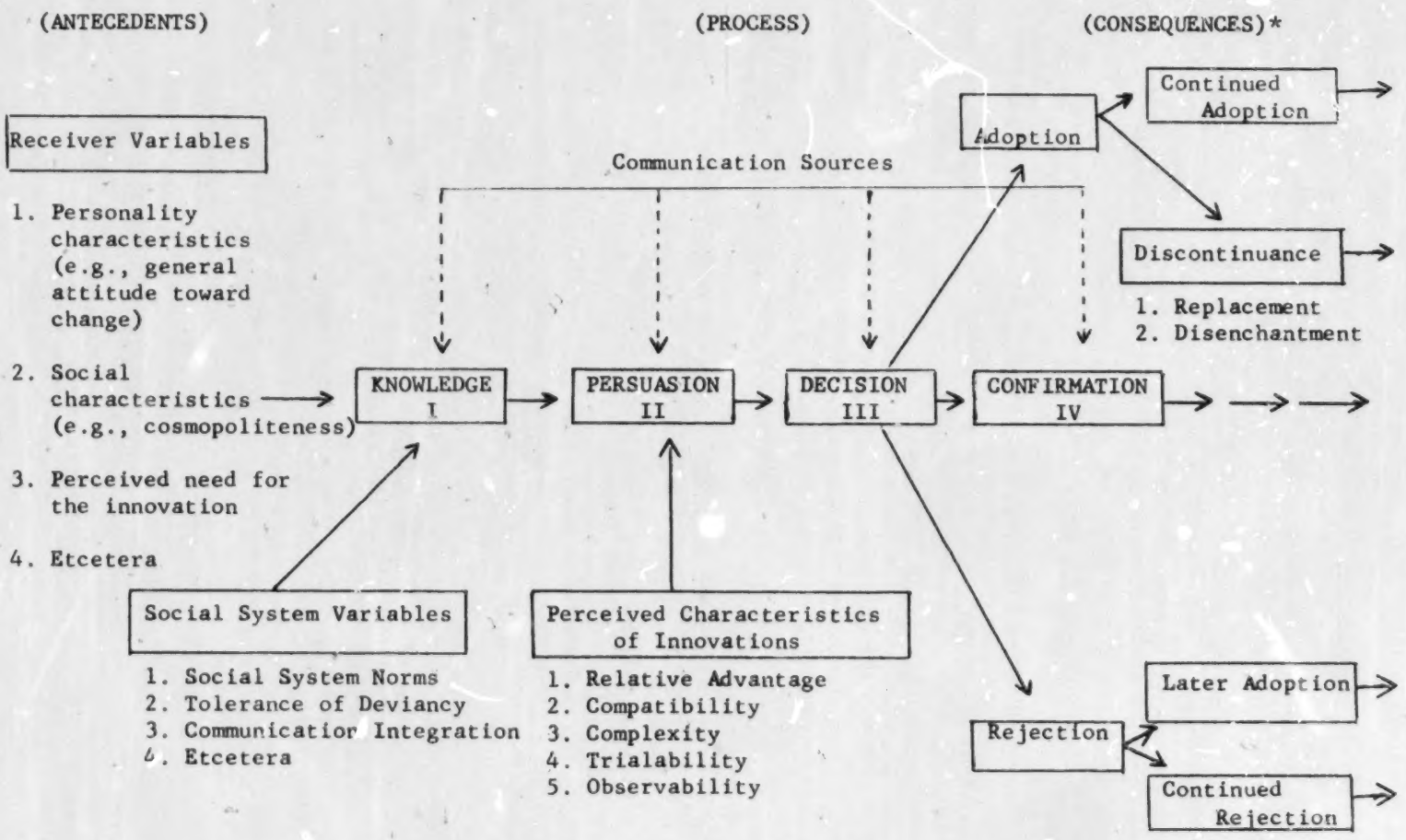
These authors have also summarized the principle "deficiencies" of this model.

> "1. It implies that the process always ends in adoption decisions, whereas in reality rejection may also be a likely outcome. Therefore, a term more general than 'adoption process' is needed that allows for either adoption or rejection.
>
> "2. The five stages do not always occur in the specified order, and some of them may be skipped, especially the trial state. Evaluation actually occurs throughout the process, rather than just at one of the five stages.
>
> "3. The process seldom ends with adoption. as further information seeking may occur (Mason, 1964) to confirm or reinforce the decision, or the individual may later switch from adoption to rejection (a discontinuance). [p. 101]"

"The Innovation-Decision Process"

Rogers and Shoemaker (1971) have prepared a more comprehensive and complex paradigm (Figure 1) of what they call "The Innovation-Decision Process." The model has four stages:

Figure 1
Paradigm of the innovation-decision process.



*For the sake of simplicity we have not shown the consequences of the innovation in this paradigm but only the consequences of the process.

"1. Knowledge. The individual is exposed to the innovation's existence and gains some understanding of how it functions.

"2. Persuasion. The individual forms a favorable or unfavorable attitude toward the innovation.

"3. Decision. The individual engages in activities which lead to a choice to adopt or reject the innovation.

"4. Confirmation. The individual seeks reinforcement for the innovation-decision he has made, but he may reverse his previous decision if exposed to conflicting messages about the innovation. (p. 103)"

They have partitioned the time flow into three major divisions: antecedents, process, and consequences, antecedents being the variables that are present before introduction of the innovation. The process division encompasses the acquisition and use of the innovation period, while consequence variables deal with the effects of continued use or discontinuance.

"The Adoption Process's Six Phases"

Havelock (1973, pp. 113-114) suggests a model of the adoption process that has six phases: awareness, interest, evaluation, trial, adoption, and integration.

"a. Awareness

During the initial 'awareness' stage, the individual is exposed to the innovation and becomes aware of it. As yet he has only a passive interest and he does not necessarily seek further information. The way in which the innovation is presented to him at the beginning may well determine whether or not he is motivated enough to move on to the second and subsequent stages.

"b. Interest

The 'interest' stage is characterized by active information seeking about the innovation. Although he has an interest in the innovation and a generally open attitude toward it, at this stage the individual has not made a judgment as to whether or not the innovation would be suitable for his own particular circumstances. As he gathers more information and learns more about the innovation, the individual's first positive or negative attitudes toward it begin to emerge. These feelings may prompt him to decide against adoption, or they may motivate him to move on to the next phase in the adoption process.

"c. Evaluation

The third stage, 'evaluation,' is generally described as a period of 'mental trial' of the innovation, a necessary preliminary to the

decision to make a 'behavioral trial.' In his mind, the individual applies the innovation to his own situation and decides whether or not it is worth the effort to try it out.

"d. Trial
In the 'trial' stage, the individual uses the innovation on a small scale in order to find out how it will actually work in his own situation. An alternative method of conducting a trial is to use the innovation of a temporary or probationary basis before moving on to true adoption.

"e. Adoption
In the 'adoption' stage, the results of the trial are weighed and considered and, on the basis of this post-trial evaluation, the decision is made to adopt (or reject) the innovation.

"f. Integration
Even when a favorable decision is made, however, true adoption cannot be considered to have taken place unless use of the innovation becomes routine. It must be integrated into the day-to-day working life of the teacher, or the administrator, or the user, whoever he may be."

Robertson (1971) has clearly stated the stance of business in regard to what they call "the diffusion process."

"The business firm, in general, wishes to achieve maximum new product diffusion, that is, the greatest possible number of adopters or the largest possible market share in the shortest period of time. Successful diffusion, in terms of these criteria, is critically dependent upon the matching of new product, promotion, pricing, and distribution attributes with the characteristics of the social system and the individual consumer (p. 29)."

Robertson goes on to identify six components to the diffusion process.

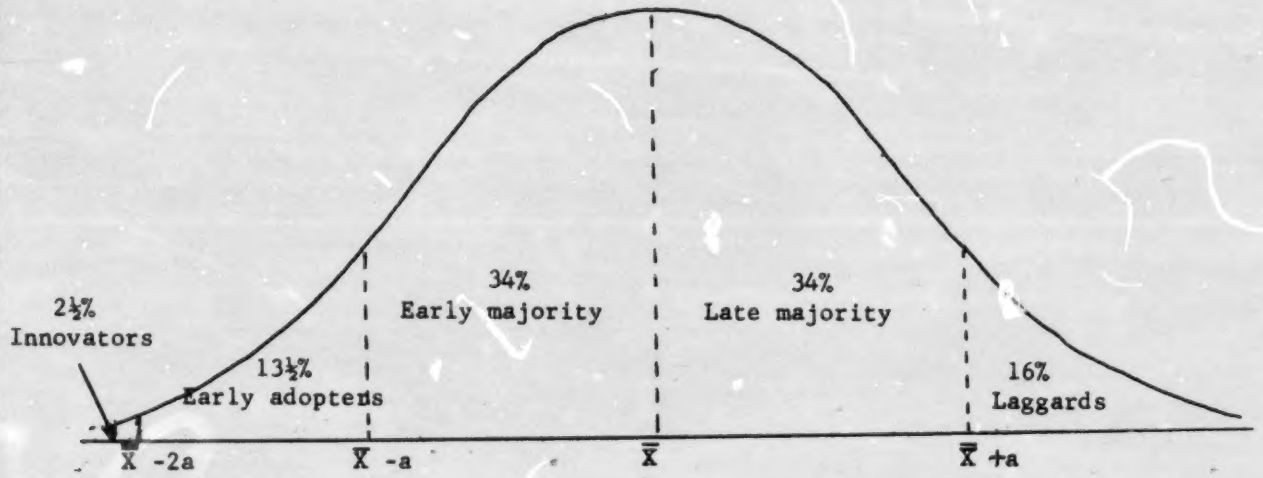
"Diffusion is (1) the adoption (2) of new products and services (3) over time (4) by consumers (5) within social systems (6) as encouraged by marketing activities (p. 32)."

He makes the following distinction between adoption and adoption process.

"Adoption refers to the use and continued use of a new item; it involves commitment rather than purchase trial. The adoption process refers to the mental sequence of stages through which the consumer progresses from first awareness of the item to final acceptance (p.32)."

Robertson also categorizes adopters based on the time from introduction to the point when they adopt. He employs the categories as have been employed in studies of agricultural innovations. Figure 2 is a plot of the types and distribution of adopter categories against diffusion time.

Figure 2



Time of adoption of innovation

(b)

Source: North Central Subcommittee (1961, p.3).

Other writers in marketing and management, including Mueller (1971), approach study of "the innovation process" using the past work of Rogers and others in rural sociology as the basis for the marketing of technological innovations that are adopted by individuals. Extrapolation and generalization of the earlier work seems to serve well.

Most of this work has been done with the adopting unit being an individual farmer, doctor, or consumer. Innovation adoption in an educational institution or other formal organization becomes a much more complex process. The dynamics that are entailed when the individuals inside an institution are involved in coordinating themselves and their resources to develop capabilities for use of an innovation is an enormously challenging encounter. Initial awareness of an innovation by one individual within an institution is a long way from having all of the appropriate individuals within the institution actively involved in working with and supporting use of an innovation. The research literature provides a foundation for studying innovation adoption in educational institutions; however additional models and concepts need to be identified before conceptual order can be brought to this complex process.

This paper proposes viewing innovation adoption in educational institutions as a developmental process with identifiable phases. Principles for change and the selection of adoption strategies are proposed as outgrowths of being able to identify these phases. This paper is only an early step to bringing order; much additional study with more tightly controlled methodology is needed before innovation adoption in education institutions will be manageable.

The Innovation Adoption Cycle in Educational Institutions

Innovation adoption in educational institutions, especially teacher training institutions, appears to be an oscillatory process that we have named

"The Innovation Adoption Cycle." This is done to make a distinction between adoption of innovations in institutions and the individual adoption process that Rogers and others have identified and studied. When the flow of events within teacher training institutions is viewed from a distance, there appears to be an ebb and flow to the innovative activity. A cyclic pattern seems to emerge when the individuals in their changing roles and the cumulative effects of their efforts are observed over a period of ten to fifteen years or longer. Institutions seem to alternate between extended periods of relative calm and tranquility and relatively short periods of intense innovative flurry. The duration of this innovative flurry and the amount of real change that occurs seems to be quite idiosyncratic. Some institutions appear to be going through generation after generation of near dormancy while other institutions seem to be able to sustain prolonged innovative thrusts. On the average, though, it appears that most educational institutions seem to maintain their own rhythm of calm, extended continuation with occasional innovative flurries.

Methodology For This Study

The data and experiences that have lead to hypothesizing an innovation adoption cycle in teacher training institutions were developed as a part of a case study of the adoption of components of the UTR&D-developed Personalized Teacher Education Program (PTEP) by teacher training institutions around the nation. This case study effort incorporated (1) analysis of the documentation records that were collected over three and one-half years of collaborative efforts between the Inter-Institutional Program of UTR&D and twenty-three teacher training institutions that adopted components of PTEP; (2) review of the literature on change, diffusion, knowledge utilization, marketing, and

management; and (3) in-depth interviews with five experienced adoption agents. In the following paragraphs, each of these data sources is described in more detail.

1. IIP Documentation. As a regular part of the activities of the staff of the Inter-Institutional Program, all contacts with the collaborating institutions were documented. Special forms were established for recording telephone calls (see Appendix A). Key event tables were maintained for each institution (see Appendix B). All correspondence and transmittals of materials were recorded and catalogued. Each time there was a visit by collaborators to UTR&D or IIP staff visited the institution, extensive narrative records were made of the interactions, problems, needs, people talked with, etc. This information was then available for studying teacher training institutions in the throes of adopting educational innovations.

2. Literature Review. As was summarized in the previous sections, a review of the published literature was made in order to determine how other researchers have viewed innovation adoption and its relationship to time. The literature search was based on a search and analysis system developed by Manning (1973) and entails computer searches, review of dissertation abstracts, reviewing key journals, checking the appropriate bibliographies and indexes.

3. Adoption Agent Interviews. Six experienced Adoption Agents reviewed the description of the Concerns-Based Adoption Model (Hall, Wallace, Dossett, 1973) and then each spent two days at the Center where they were interviewed in depth about their experiences as adoption agents. These agents represented extensive experience as internal or external adoption agents. Two had worked extensively with innovations in teacher education. As a part of their interview, they were asked to describe the "innovative history" of the various institutions they had been working with. They were asked to identify kinds of innovations,

time spans, and characteristics of the various periods in the life of the institutions.

This wealth of material has been studied case by case and the following commonalities, observations, and hypotheses have been synthesized. Whether or not these relationships, in fact, exist and are representative is an issue that can be tested. For now, they are presented more as tentative hypotheses to develop awareness and specification of these dimensions of change in educational institutions and, hopefully, to serve as a basis for a more quantitative study of the Innovation Adoption Cycle.

Equilibrium and Disequilibrium

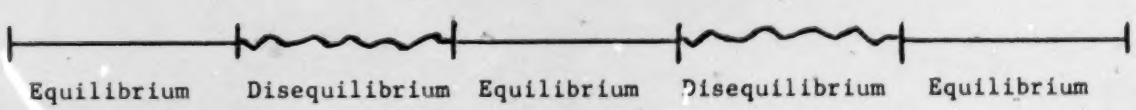
Probably the most obvious point that can be made about people involved in innovation adoption in educational institutions is that they appear to have little comprehension of what they are letting loose when they decide to push for use of today's innovations. They tend to approach adoption of these complex innovations with the casualness of changing textbooks. Most do not seem to be aware of the changes, the new skills, new roles, the required reallocation of resources, the effects on students, the value and goal conflicts and the time required to effectively adopt innovations such as modularized instruction or faculty teaming. They seem to be even less realistic in their assumptions about the ease of adoption of something more diverse such as Competency-Based Education or Individually Guided Education.

In most educational institutions, there is very real potential, relatively speaking, of "all hell breaking loose" for a period of several years when a serious attempt is made to adopt a complex innovation bundle. Yet, this effort is approached with a frightening naivete by institutional and program leaders. This naivete is reflected in their assumptions. For example: (a) faculty can do all they are presently doing and still develop capability

and start using the innovation, (b) the innovation can be fully institutionalized in a year and a half at the most, (c) faculty will naturally see the obvious advantages in using the innovation (i.e., faculty and administrators are rational decision-makers), (d) it will not cost anymore than what we are doing now and it is probably cheaper, (e) it will not take any or very little of the administrator's time, (f) this innovation can be adopted at the same time that another complex innovation is being adopted, (g) new organizational structures (reorganization of departments, schools, etc.) will not be necessary, (h) there already exists open communication horizontally and up and down the institutional hierarchy, and (i) only minor objections will arise from threatened personal empires (and these can be dealt with by telling them where they fit in). These assumptions and others, if held by the leadership and decision-makers of an educational institution that is about to commit to adopting a complex educational innovation, are danger signals of the highest magnitude. They are warnings of impending and prolonged chaos, confusion and, quite probably in the end, abortion of the innovation.

In viewing the history of institutions with regard to their innovation adoption activity, a cycle becomes readily apparent. This cycle entails an extended period of relative calm that we have named, for obvious reasons, equilibrium. The other major portion of the cycle is a period of great activity and disruption that we have named disequilibrium.

Figure 3
Innovation Adoption Cycle in Teacher Training Institutions



The period of equilibrium encompasses the time span between two rounds of innovation adoption activity (disequilibrium) in institutions. Within this period, various individuals may be adopting innovations, but the user system as a whole is in a period of relative calm. The previously adopted innovations are all functioning at stable levels, and no new innovations that would require a large mobilization of staff and resources are being injected. Most productive energies are wandering off to other things with minimal investment of energy being required to maintain the on-going activities.

Disequilibrium occurs at those times in the life line of institutions when large scale changes are required to support the adoption of some complex or broad based innovation. This is not normally a time of a chaos in the truest sense, but relative to the preceding period of equilibrium, it may appear to the participants to be chaotic. Periods of disequilibrium, ideally should be times of "controlled imbalance" where the individuals within the user system develop the capacity to effectively use the innovation and the necessary readjustments in the user system are made to support this developing capacity. Periods of disequilibrium are times of change.

Individuals are confronted with the need to learn new skills and retire old ones. Roles change, individual beliefs, and values can be in conflict with the innovation and/or the institution's value position. Implicit and explicit assumptions may be in conflict. Time is required to do everything. It is a period for rethinking and clarifying; there also is apt to be pain.

In our study of the Innovation Adoption Cycle, there appears to be little anticipation and concomitant planning for periods of disequilibrium. Instead, it seems to be triggered by the efforts of one individual in an influential position that has a "great" idea and sells it to a few others. This opinion leader or "generator" of ideas will most likely not be the one who follows

through with the necessary support and facilitating behaviors that will be reeded to achieve some degree of institutionalization. His leadership style is not suited to this (more about this later). Instead, others will need to pick up the ball. What planning that does occur during disequilibrium periods is more intra-crisis bailing behavior than planning ahead.

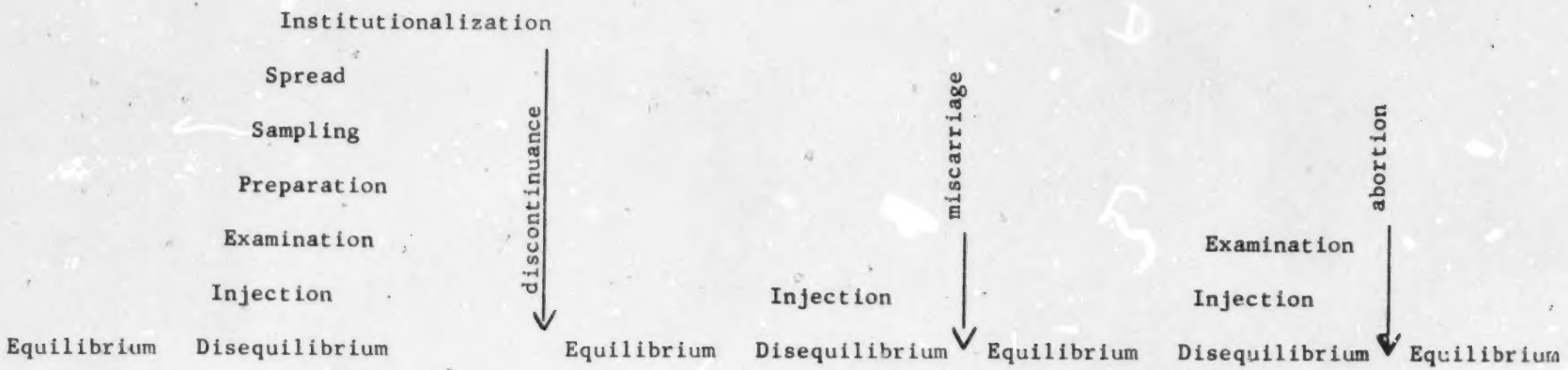
Due to the energy consumed and the stress and strain that accompany periods of disequilibrium, the periods do not last for too many years unless stress reduction is occurring and growth is thereby facilitated. As nearly as can be estimated based on the available data, equilibrium periods appear to last longer (10 - 15 years) than disequilibrium periods (3 - 7 years). However, for some institutions equilibrium is a way of life while for other institutions disequilibrium is a way of life. The optimal balance between periods of equilibrium and disequilibrium for a given institution is an area that deserves extensive study. This balance factor most probably is a combination of variables related to the degree of success in the previous Innovation Adoption Cycle and variables related to the growth orientation of the individuals and the user system as an institution as well as the catalytic capabilities of any adoption agents who work with the institution.

Phases of Disequilibrium

Within disequilibrium, there appears to be six Phases: (I) Injection; (II) Examination; (III) Preparation; (IV) Sampling; (V) Spread; and (VI) Institutionalization. These six phases form a developmental progression that may be arrested at any time. Subsequent abortion is an all too common result. The overall time line of an institution might look similar to Figure 4. There are many starts at disequilibrium with passage through a varying number of phases with intervals of equilibrium in between. The time of each phase is

Figure 4

Phases of Innovation Adoption



variable as is the length of any disequilibrium period. This variation in phase duration may account for some of the individual differences between "early adopters" and "laggards." Some users may become aware of the existence of an innovation early on (Injection) and yet not decide to try out the innovation until many others have reported success.

In the following paragraphs each phase will be described. Descriptions of the more advanced phases are less certain than for the earlier phases since the advanced phases do not occur as often. We have very limited data on the Renewal Phase since this phase is rare indeed. For example, the Renewal Phase is just beginning to emerge in one large college of education in the Inter-Institutional Network after seven years of intensive CBTE program development.

I. Injection. Injection begins with first awareness of an innovation within a user system. Initially only one person or a very few individuals are aware of the innovation. As will be noted throughout this discussion, leadership style appears to be very important to the success of innovation adoption in educational institutions. Many individuals within a user system at any given time will be encouraging adoption of certain innovations. In most cases no action is evident since these individuals are unable to influence the adoption activity of the user system. In those cases where the Injection Phase advances, awareness of the innovation has probably been promoted by a special individual that we call a generator.

Generators are individuals who are usually seen by their colleagues as idea people: "I suppose he is the only real intellectual on our faculty." Their position within the user system is such that they are able to influence (i.e., be creditable with) the line faculty and also have access to the middle-level administrators (deans and department chairmen). Generators are apt to be more divergent intellectually than their peers. They seem to be able

to be more flexible in their work roles and still be credible. In many cases they are moderately successful grantsmen.

With the active support of a generator, who in most instances is the one who formally introduces the idea of the innovation to the user system, interest in the innovation begins to spread to other faculty and administrators. Otherwise, the idea will more than likely lie fallow or be forgotten.

II. Examination. This phase begins at the point in time when the idea of the innovation is being talked about by several members of the user system. In the Examination Phase interest in the innovation becomes formalized. This normally means a committee is established to study the topic and make recommendations. The generator will be active in the committee at first to get it started, and he may seek outside funding to support pilot use of the innovation. If the committee drags on too long or if motion is not rapid enough, active involvement of the generator is apt to fade.

During the Examination Phase, outside consultants who have expertise with the innovation will be brought to the user system. Individuals and small groups of faculty will take trips to visit other user systems who are already using the innovation. Individuals attending professional meetings will be asked to find out what they can about the innovation and whether or not it is a coming thing. Meanwhile, the rest of the faculty will be watching the Examination Phase progress. If it appears that a decision is likely to be in favor of pilot use of the innovation, the faculty will become much more active in tapping the grapevine ("I heard they are going to make JoAnne the Team Leader"). Interest in and awareness of the innovation will be much increased.

In general, the shorter the Examination Phase, the greater the likelihood of a pilot use of the innovation. If the Examination Phase is prolonged for more than one academic year, the likelihood of innovation adoption decreases

at an ever-increasing rate. If there is a study committee and it recommends that there be further study, or that another committee be formed, then all bets are off. The generator will be off to other things; the faculty will no longer be aroused or as apt to take consideration of the innovation seriously and the committee meetings will be less and less frequent.

III. Preparation. With a decision to use the innovation in a pilot project the Preparation Phase begins. This phase can be as simple as ordering a new textbook or as complex as involving an experimental faculty team in a spring semester and all of a summer in recruiting students, planning facilities, identifying schools and teachers, participating in faculty inservice workshops, and constructing materials. The Preparation Phase will involve heavily those who will be working directly with the program. The remaining faculty and administrators will wander off to doing their own things and unless assertive communication channels are established and maintained, they have the potential of becoming the underground resistance to future spread and institutionalization of the innovation because of lack of identity with and knowledge of the innovation.

IV. Sampling. The Sampling Phase begins with the first day of actual pilot use of the innovation. This becomes the time for giving the innovation its test of fit. Is it adoptable or adaptable? This is the time to identify and iron out the bugs that will make its subsequent use by other members of the user system easier (if that decision is made in the future). During the Sampling Phase the effects of its use can be explored, the costs involved can be measured, the effects of the innovation on the user system can be extrapolated.

Use of the innovation may be recycled through several "experimental programs," however, a definite end date should be established at which time the decision is made whether to involve all members' use of the innovation or

to abandon it. The innovative program that receives national acclaim after six years of use but is still used by only part of the relevant personnel in the user system has failed to make its best contribution.

Failure to move toward Spread does not likely mean peaceful coexistence between haves and have-nots. It usually means rivalry and competition, which in many instances inhibits further growth of major components of the users system. If an innovation is to continue to be used within a user system without intentional spread, then this must be a conscious and planned decision. Failure to do so brings high risk. No decision may be the more momentous decision of all.

V. Spread. If the Sampling Phase was successful then use of the innovation by other members of the user system is likely. This phase begins when others begin actual use of the innovation.

This phase needs to be anticipated and planned for. The grouping of users in this phase must be carefully planned (and should have been anticipated when setting up the pilot users). If all of the adaptive innovative members were involved in the Sampling Phase, then when the point for Spread is reached one prays that those assertive, open communication channels set up earlier have done their job, otherwise the regular faculty may not be willing to use the innovation.

This does not mean that the hard-core resistors will not be there, rather it means that they will have seen this day coming and not be able to say that there was no opportunity for them to become involved earlier or that the innovation is not "ours" but "their" thing (referring to the pilot users).

The Spread Phase takes time and support. Many people seem to think that once sampling is complete that all the added users will be near instantaneous experts without the growing pains that the pilot users experienced.

Not so, even with the bugs worked out, Spread necessitates most likely working with the "weaker," less adventuresome members of the user system, so support of a different kind is needed.

A different kind of leader is needed to facilitate accomplishment of this feat. The dominant, assertive, colorful generators might be asked to play what is for them an almost impossible role. A quiet, patient, supportive nuts-and bolts oriented leader is needed. He must be good at working with individuals. He has to be knowledgeable in the use of the innovation and must be able to accept the fact that others have to grow into sophisticated use of the innovation just as he once did.

VI. Institutionalization. Institutionalization is the phase when the innovation is used as a regular program component by all or nearly all of the potential users within the user system. Use is on a continuing basis as the normal routine. The quality of use is not a criterion for being in this phase -- just whether all or nearly all of the potential users are using the innovation.

A difficult balance must be maintained during this phase between entrenchment and coming to a superficial decision to discontinue its use. In many instances, yesterday's innovations become today's sacred cows. In other instances, an institutionalized innovation may be abandoned for another that is not as good. Walking the line of maintaining use with renewal and not falling to either side is in itself a big challenge.

The time line in Figure 4 of innovation adoption in educational institutions would be far from complete if mention was not made of the all too real possibility that once innovation adoption begins the full part to institutionalization will not be completed. At each point along the line the possibility that adoption will be miscarried or aborted or that institutionalized use will be discontinued must be considered.

To graphically represent miscarriage, abortion, or discontinuance an arrow off the terminal phase with a label of its fate can be used as in Figure 4. In theory the innovation could be picked up again at some later date, but this does not seem to be a very frequent occurrence. Rather, the termination of adoption of an earlier innovation is often waved by obstructionists as a warning flag against adoption of a subsequent innovation.

The problem of abortion, miscarriage and discontinuance is such a wide spread phenomena that research in this specific area should be of a high priority in and of itself. The costs, both financial and personal, are so high when innovation adoption is attempted that user systems cannot afford to find out that they have bought a "dud" and must face rejection. In other cases innovations are institutionalized at a low level of use for very short periods and then dropped to pick up the next new thing that comes down the pike.

A renewal ethic is a very important value to maintain during the institutionalization phase. When a user system is involved in innovation adoption, little time and energy can be reserved for speculating about more ideal innovations. Once institutionalization is achieved for a given innovation, ideally, renewal opportunities should increase. Blind loyalty to an innovation should not be encouraged, loyalty to the desired outcomes and how best to achieve them should be considered. Variations should be explored as should competing innovations when they appear to have potential to do a better job of achieving the desired outcomes. Maintaining and sustaining a renewal stance within a user system is the key to continued growth of its members and continued success of the user system in making the contributions that are its reason for being.

In summary it appears that innovation adoption in educational institutions entails six phases: (I) Injection, (II) Examination, (III) Preparation, (IV) Sampling, (V) Spread, and (VI) Institutionalization. Each phase has its characteristics, required strategies, and dominant channels of communication. If these phases or some variation on them exist, then planning for and facilitating innovation adoption can be more easily accomplished. It is not necessary that every institution pass through all phases. With many innovations abortion may occur in an early phase while with others a low-level institutionalization may be all that is accomplished. However, the degree of successful innovation adoption may be enhanced by consideration of these phases in planning for the change. Some possible strategies and principles for planning for innovation adoption are proposed in the remaining section of this paper.

Some Quantitative Data on Phases

The data summarized in the following tables were extracted from documentation records that were maintained as a part of the collaborative activities of the Inter-Institutional Program. The data are from six institutions that UTR&D has collaborated with long enough to have observed them through several phases. The innovations were components of PTE. As of this writing, no institution has entered a Renewal phase, although at least one appears to be close to this.

The duration of each phase is summarized in Table 1. Since documentation did not begin until UTR&D was contacted, the duration of the Injection phase is not known with enough certainty to have confidence in assigning any numbers. With the other phases, several patterns seem to be emerging, although of course the sample is obviously small.

Table 1

Duration of Phases (in months)

	Injection I	Examination II	Preparation III	Sampling IV	Spread V	Institutionalization VI	Renewal VII
Teacher Training Institutions							
U		1.0	5.0	14.0	---	11	Discontinuance
S		1.0	3.0	11.0	Discontinuance		
A		3.0	7.0	11.0	12.0	---	
C		8.0	4.0	14.0	---	14+	
H		3.0	8.0	12.0	5.0	12+	
I		1.5	2.0	10.0	1.0	16+	
Average		2.9	4.8	12.0			

The following severely limited generalizations seem to exist. Each succeeding phase in the innovation adoption cycle takes longer than the preceding phase. That is, once examination of an innovation begins, a decision to try it out is made quickly (2.9 months being the average). Preparing to use the innovation takes a little longer (4.8 months being the average). The first sampling takes an average of 12 months. After sampling, use of the innovation either spreads to other users within the user system or is institutionalized with the first users only.

As was pointed out earlier, discontinuance at any phase is also a real possibility. For the two institutions in the table that did discontinue use of the innovation at least two factors seem to be related. First, the Examination phase was short; one month. Secondly, the Preparation phase was also relatively short; three and five months, respectively.

The above interpretations are admittedly based on limited data, however, the data in total do provide some real-world basis for estimating the duration of each phase and the composite equilibrium period.

Communication Channels

Records have also been maintained on the frequency and type of communication channel employed during collaborative linkage of UTR&D with these six teacher training institutions. In Table 2 the frequency of use of the various communication channels is tallied for each phase. The communication channel categories are letters, packages, telephone and visits. In the table the source of initiation of the communication is also identified. Thus it is possible to compare the source of initiation and the type and frequency of use of each communication channel during each phase.

As would be expected, letters were frequently employed as a means of communication by both the user and the resource system. Telephone calls appear to be equally frequent on the average. The major trend that appears

to emerge from the data is that the resource system seems to be the dominant source of activity during Phases II, III, and IV and then in Phases V and VI the source of action is balanced. In theory this would suggest that the resource system has served its function. That is, the user system is on the way to developing its own capability to use the innovation and the collaboration linkage has really become a two-way street. What is not clear from the available data is information about how the collaboration linkage ends. Does it just stop, tail off gradually, or are new directions co-created?

Implications for Planned Innovation Adoption

Although the idea of there being phases to innovation adoption in educational institutions must be considered as tentative, several implications are suggested that appear to bear strongly on the success or failure of innovation adoption in teacher training institutions. Based on our experiences these points should not be taken lightly. The concept of phases provides the adoption agent with bench marks for partitioning this complex process over time thereby easing the task of planning and managing change. Consideration of these points should increase the likelihood of institutionalization and effective use of the innovation.

The two major sets of implications will be described. First will be identification and analysis of a set of alternative adoption strategies. Second will be a listing of suggested principles based on the concepts presented in this paper and the first-hand experiences of adoption agents. Neither list is all-inclusive, however, they can serve as a beginning point for development of a more refined and comprehensive list as well as being of immediate utility to those engulfed in innovation adoption.

Table 2

Frequency of Communication Between User System and Resource System

	Injection I		Examination II		Preparation III		Sampling IV		Spread V		Institutionalization VI		Renewal VII	
	from US	from RS	from US	from RS	from US	from RS	from US	from RS	from US	from RS	from US	from RS	from US	from RS
Letters														
U			1		5	3	7	4			5	3		2
S			4	4	4	5	14	19	Discontinuance					2
A			NA*	NA	NA	NA	4	5	9	9	4	7		
C			2	2	3	5	3	11			3	3		
H			2	4	10	4	15	13	6	9	8	11		
I					1	1		3		1	8	5		
Average			2.25	3.33	4.6	5.6	8.6	9.16	7.5	6.3	5.6	5.8		2
Packages														
U						1	8	15			1	8		
S						1	5	10	Discontinuance					2
A				1					1	7	1	3		
C						1	4	6			1	3		
H						1	18	24	4	10	1	9		
I					1	3	2	7	1	2	8	11		
Average				1.0	1.0	1.4	7.4	12.4	2	6.3	2.4	6.8		2
Phone Calls														
U			NA	NA	8	11	3	14			3	8		1
S				3	1	4	5	11	Discontinuance				2	1
A			NA	NA	1		1	1	5	11	4	2		
C				3	2	2	1	10			1	2		
H				1	4	8	32	25	21	20	40	36		
I			1	1	4	2	6	12	1	3	6	10		
Average			1.0	2.0	3.3	5.4	8	12.16	9	11.3	10.8	11.6	2	1
Visits to														
U				1	1	2		1					1	
S			1		1		1	1	Discontinuance					
A	1				2	2	2	3	11	3		1		
C		1		2	1		2	1						
H		1			3	3	3	4	7	2	7	5		
I					1	2	1				1	1		
Average			1.0	1.5	1.5	2.25	1.8	2.5	4	2.5	4	2.3	1	

*NA indicates a situation where collaborative activities preceeded establishment of IIP documentation procedures.

Adoption Strategies

"Adoption strategies" refers to the general game plan that is employed for adopting innovations by formal user systems. Like the military use of the term, strategy as used here refers to the overall coordination and assignment of personnel and resources for accomplishing a goal. In this case the goal is quick, relatively effective institutionalization of an innovation with widespread high quality use. In everyday practice the adoption strategy seems to sort of evolve out of the events and idiosyncrasies of the people involved. Unfortunately, this evolutionary serendipitous approach is not always productive and most certainly will not be as efficient as taking time to develop a well calculated adoption plan in advance.

The following list of adoption strategies is suggested as a heuristic for managers of innovation adoption so that they may better determine and plan their effort. Each strategy has potential strengths and inherent weaknesses. A combination strategy, if well managed, will probably be best for any given innovation and any given user system. The labeling of adoption strategies should, however, provide adoption agents or change managers with a way for organizing and categorizing their game plan.

A least a dozen adoption strategies can be identified as having received extensive use. These include:

1. The Boot Straps Approach. An individual or an entire user system attempts to develop or use a new product on its own. The collection of necessary resources for use of the innovation and learning how to use it are carried out with no outside support or assistance.

Advantages: The expense to the user system is minimal.

Disadvantages: The out-of-hide costs and drain on individuals and user systems may exhaust the creative and productive talents of the people involved.

2. The Decree. An individual with decision-making power in a user system announces that an innovation will be in use as of a particular time. The decision maker may be a person who believes in and practices "rational" decision-making. He assumes that everyone in the system will naturally see the obvious advantages inherent in the innovation. In many cases, few resources or support systems are allocated to the adoption process. Adoption is assumed to be a fait accompli and requires no dragged-out support.

Advantages: Innovation adoption is accomplished quickly and requires minimal tool-up investment.

Disadvantages: The users may not see or accept the advantages that are so obvious to the decision-maker. Users' commitment may remain low and high-level use of the innovation may not follow.

3. The God-Bless-You Approach. A resource system representative or consultant works with the user system for a few hours or as long as one or two days when the innovation is first introduced. He then leaves and the user system is left on its own to work out any problems and with the expectation that the innovation will be used effectively.

Advantages: Carefully selected outside consultants can really get a user system highly motivated and prepared to accept an innovation. The user system that can find consultants doesn't need to indulge in the costly investment of adding experts to its own staff.

Disadvantages: The user system may find itself lacking in skill or support to handle problems that inevitably start to appear when the shiny wrappings come off and the innovation is put to work.

4. Intensive Retraining. Individual members of a user system are introduced to an innovation in a summer workshop, inservice training session, retreat, or short visit to a training center and then begin to use the innovation within

the user system. There may be occasional follow-up conferences or meetings during the first year of use.

Advantages: Individuals are well prepared to begin use of the innovation. Communication channels are opened between peers who are sharing the experience.

5. Sabbatical. An individual who will be using the innovation takes an extended leave to spend time at a training center or with an institution already using the innovation. He then can return to his own institution as an advocate of the innovation and facilitate its use.

Advantages: One member of the user system obtains in-depth knowledge of and experience with the innovation and its use. The member also provides access to outside contacts and resources.

Disadvantages: The appointed member must also be a creditable change agent if his knowledge and experience are to have an effective impact on his own institution. This role requires patience with naive colleagues as they develop the capacity to use the innovation.

6. Super-Star Strategy. The user system imports one or more recognized experts in the use of an innovation as full-time members of the system. These experts might have acquired knowledge and experience through use of the innovation in another user system or they may even be the original developers of the innovation.

Advantages: The user system gains immediate access to expertise and knowledge about the innovation. The user system gains national visibility.

Disadvantages: The "old guard" staff of the user system may not receive warmly the input of the super-stars. Super-stars are usually only good at one place for three to six years before they move on. They may be threatening for less productive staff members.

7. Experimental Units. A small group of individuals from within the user system experiments with the innovation on a trial basis. If the innovation is successful, it is implemented in the whole user system.

Advantages: All of the user system does not have to suffer through the problems of initial adaptation and development of the innovation. If the innovation experiment fails a much smaller percentage of resources are lost than would be in a blanket adoption.

Disadvantages: The innovation may be perceived by the rest of the user system as the special "pet" project of the experimental unit. The experimental unit may never be accepted and integrated into the regular pattern of the user system; it may always remain in its own special location within the system without spread.

8. Blanket Adoption. The innovation is "adopted" by everyone in the user system at the same time. Training may vary from none to extensive.

Advantages: The entire user system begins use at once with minimal delays in change-over.

Disadvantages: A greater initial investment is needed to provide all of the necessary resources and staff training. The innovation may turn out to be inappropriate and the trauma of discontinuance on top of the disequilibrium of beginning use can be severe. Any "debugging" of the innovation in its new context must take place system-wide.

9. Outside Collaboration. The user system links with an outside resource system for a long-term collaborative relationship.

Advantages: Specialized expertise can be obtained without making excessive commitments in return. The outside perspective is more pervasive and outsiders inject ideas based on in-depth and varied experience. The collaborative arrangement allows the user system access to the skills, expertise, and other resources of the resource system and provides the resource system a field base for evaluation and for research in innovation development.

Disadvantages: The wrong collaborative partner can mislead an entire user system, perhaps as a result of not having sufficient commitment to or credibility with the user system or its component parts. Also, the outside help may not be available on a day-to-day basis, thus slowing problem solving.

10. The Pennsylvania Contingent. A new group of people is added to the system on the coat-tails of a change in administration.

Advantages: Communication channels and roles within the new group are often already established or can be quickly set up. Trusted people with specialized expertise are available for the leader to use immediately to expedite innovation adoption.

Disadvantages: Existing members of the user sytem may resent the dynamic newcomers. There may be little or no communication between the two camps.

11. Good-Time Workshops. This non-adoption strategy is extensively used in school systems where a specific number of days are set aside during the year for inservice training. There is no real commitment to an innovation or to innovation adoption. The goal is, rather, to entertain the staff for the duration of the workshop and have them leave reporting that it was fun.

Advantages: No commitment required of anyone, no particular resources needed.

Disadvantages: Nothing is accomplished and the likelihood is high that many participants won't have a good time.

12. Multiple Adoption Design (MAD). This strategy is widely used in public school systems. An attempt is made to adopt at least two and probably more independent and even conflicting innovations at the same time.

Advantages: The user system appears to be highly innovative. Everyone can be involved in something and the system avoids the delay of adding innovations one at a time.

Disadvantages: The acronym MAD was intentionally chosen. The innovations will compete with each other, even if they are not inherently in conflict, causing great difficulty in getting any one of them institutionalized. Some personnel will get spread too thin. Preoccupation with the adoption process will cloud out the reasons for adopting them in the first place.

None of these adoption strategies is likely to be found in pure form, rather a combination of two or three is likely. Depending upon the characteristics of the innovation, the amount of individual, institutional and innovation-related changes necessary for adoption, and the types of potential interactional conflicts, some strategies will be more successful than others for given situations.

Principles for Planned Innovation Adoption

1. There are identifiable phases to the period of disequilibrium.

There appear to be six phases to disequilibrium. By carefully calculating and monitoring the innovation adoption cycle, these phases can be assessed and predicted. Since each has its own characteristics, potential problems and outcomes, they can be planned for and the total effort more easily coordinated by attending to these developing phases.

2. The time necessary for successful innovation adoption in educational institutions (period of disequilibrium) is not one or two semesters but three to five years.

As the data and descriptions presented earlier in this paper illustrate, adoption of major innovations takes time. Experienced adoption agents talk of two- to four-year commitments to user systems if they are really serious about developing high-level use of an innovation. These experienced adoption agents will not do the one- or two-day "God bless you" workshops that are

so common today. They believe that nothing is accomplished from such short-lived interaction and that while the user systems may have the "box" in the classroom quality use of the innovation takes several years to develop. With more complex innovations the time to high-quality use increases, as does the need for consultative assistance. Therefore, plan the effort and set expectations for a long haul.

3. Select your adoption strategy carefully.

The selection of the adoption strategy to be employed needs to be well calculated, not just the result of letting it happen naturally or discovering some momentarily attractive approach and committing to it without further thought. Very different leadership styles and resources are required for the early phases (Injection, Examination, Preparation, and Sampling) than are needed to achieve Spread and Institutionalization. The "white knight" leadership style certainly is effective at getting things started, both by getting a critical mass of prospective users activated and in obtaining higher administration commitment and resources for the effort, however, a very different leadership style will be needed to sustain and encourage the less-involved faculty to start using and to become effective users of the innovation after the early users have already developed their capabilities. There seems to be little tolerance on the part of first users to accept the fact that the late users will need not only as much time and support to develop capability in using the innovation as did the early users but probably more. The adoption strategy selected should take into account the needed immediate, intermediate and long-range resources. If the user system is small and spread is not a problem then the experimental program adoption strategy may not be needed or cost effective. If the formal leadership of a user system is predisposed to the decree adoption strategy then either this strategy needs to be

headed off at the pass or arrangements need to be made to offer the supportive, maintaining kind of leadership that will be needed through some other means, otherwise obtaining institutionalization with high-quality use is threatened.

4. Communication with all channels open and deliberately reaching out to inform and involve others is a continuous must.

It is quite characteristic of those users who are first involved with the innovation to become so involved in their work that they neglect to inform others about their activities. The intent is not malicious, but they forget that the others quickly develop the feeling of being outsiders and that the innovation may become "their innovation not mine." The early users are excited about their work and have a tendency to take the stance that what they are doing is obviously so exciting and powerful that the other potential users will, by some process of osmosis, become equally excited about it. Reality, however, is slightly different. The early users must continuously attempt to inform the others about the innovation and encourage that they consider its use. They must systematically reach out to potential users, otherwise the doors will remain closed and in time will become permanently locked. Outsiders will not be very apt to open the door, it is up to those who are actively involved with the innovation to continually and intentionally be opening the door and reaching out.

5 Adopting two or more innovations at the same time is counter-productive and becomes more so at a geometrically increasing rate.

Innovation adoption, especially of complex innovations and innovation bundles is a disruptive process. Attempting to develop the capability to use two or more innovations at the same time results in the disruptions that each would cause independently plus the compounding disruption of the effects of each innovation on the other. In most cases where the rate of adoption of

innovations is too ambitious, much energy and resources are lost in the midst of the chaos and confusion that results and effective use of all innovations is lost, even though the boxes may physically exist in each classroom.

In this instance it should be remembered that by innovation we do not mean solely curriculum innovations. An innovation is a product or process that results in observably different behaviors or outcomes. Innovations may include new deans or superintendents who have different priorities or leadership styles. Faculty preoccupation with the termination of a fellow faculty member, or lack of promotions and salary increases can make adoption of an educational innovation a second order priority. In one state, for example, curriculum development, program development, and research has been at a near standstill at nearly all of the state-supported colleges while the faculty spend their time, energy, and resources on the selection and utilization of the union that will represent them in collective bargaining. Another example is the college that is rapidly losing enrollment and the faculty and administration are so preoccupied with survival that they have become paralyzed as far as any innovative thrusts are concerned.

7. <u>When planning for adoption of an innovation, consider what has happened in the past when other innovations were injected in the user system</u>.

A user system that has a demonstrated track record of being able to maintain its level of equilibrium at a renewal level will have much less difficulty in adopting an innovation than will the user system that has not even had an innovation injection in five years. The previous track record can be predictive of the points where trouble is likely to occur with the next round of innovation adoption. Also, if the previously adopted innovation is at an overall mechanical level of use then the injection of another innovation is likely to arrest further development of the first innovation.

8. Conservatively estimate the degree of disequilibrium that the user system can tolerate without becoming completely disfunctional.

A conservative estimate should be taken since the actual amount of disturbance that will occur is certain to be at least twice the amount anticipated. Change is an unbalancing process and there are bound to be problems. First, accept as legitimate the occurrence of problems and then anticipate their occurrence by establishing problem-sensing systems and problem-solving approaches to innovation adoption. As a part of this activity, estimate the amount of disequilibrium the user system can tolerate and then estimate the amount of disequilibrium the innovation is likely to induce. Halve the first estimate and double the second estimate. If the resultant difference is greater than zero, then adoption of the innovation is potentially viable.

$$\left[\begin{array}{l}\text{(estimate of amount of}\\ \text{disequilibrium that}\\ \text{can be tolerated}\end{array} \times \ 1/2\right] - \left[\begin{array}{l}\text{(estimate of amount of}\\ \text{disequilibrium the}\\ \text{innovation is likely}\\ \text{to induce)}\end{array} \times \ 2\right] = Y$$

If $Y > 0$ innovation adoption is viable

$Y \leq 0$ forget it.

9. Different leadership styles are needed at different phases.

The knight on the white horse is great for getting things started, however, this dynamic, intense, appealing, verbal conceptualized style is not effective for encouraging the "spectators" off the bench and into the game. In the later innovation adoption phases a more patient, supportive, quiet, "nuts and bolts" oriented, cajoler leadership style is needed. It is rare, if not impossible to find an individual who is capable of practicing both leadership styles. This is an argument for changing horses in midstream. The generator leadership style should be recruited for initiating the

innovation adoption cycle and then, when it is time for spread within the user system, it is time to change to the more technical/mechanical cajoler to carry out spread and institutionalization with high-level use of the innovation. This is, of course, assuming that both leaders are committed to adoption of the same innovation.

10. User systems need to be at a point of relative stability at the time of injection.

If the members of a user system are deeply involved and entangled in some activity, then injection of an innovation is not likely to "take" or is probably going to destructively interfere with the already ongoing activity. This strategy can be used to advantage some times if the ongoing activity is undesirable. Often injection of a complex innovation can break the preoccupation of the members of a user system with some other issue and get them moving in more productive directions. However, there is an ever-present risk of backlash that could wipe out everything.

Some Last Words

In this paper the author has attempted to organize and categorize some of the data from the UTR&D Inter-Institutional Program, and the first-hand field experiences of the author and five other experienced adoption agents and build on the literature. Rather than presenting the entire paper as a data-based, empirically-oriented study, which would have been meaningless considering the real world data sources, an attempt has been made to categorize phenomena and to extrapolate from these findings key concepts and principles that could form the basis for developing empirically test-able hypotheses and also possibly be of some immediate utility to those involved in innovation adoption who would like to make their change managing effort more organized and planned.

The concept of a user system oscillating between times of equilibrium and disequilibrium was a beginning point. It was then suggested that there are identifiable phases within the disequilibrium period. These phases are: (1) Injection, (2) Examination, (3) Preparation, (4) Sampling, (5) Spread, and (6) Institutionalization. Out of analysis of the documentation data of recent attempts at innovation adoption in teacher training institutions some approximate time intervals have been assigned to each of these phases. The frequency of use of different communication channels was also explored. The last section of the paper briefly presented a description of possible adoption strategies that can be employed and a listing of some principles to follow in planning for and managing innovation adoption in teacher training institutions.

The data and experiences are limited at this time, however, the ideas and what data there are are offered to the reader through this paper and others in the CBAM series in an attempt to provide practitioners and researchers with whatever insight and findings we have that may be of help to them in studying, planning, and managing innovation adoption. We think that the ideas are not applicable only to teacher education institutions, but rather apply as well to other educational institutions such as schools, perhaps even beyond. Time and further work, both in research and in the trenches, will be the only way to answer the many questions that are presently identifiable and those yet to be raised. We seek feedback and commentary from all as one means of accelerating our understanding of this complex process.

Bibliography

Hall, G. E., Wallace, R. C., & Dossett, W. F. A developmental conceptualization of the adoption process within educational institutions, Austin, Texas: University of Texas, Research and Development Center for Teacher Education, 1973.

Havelock, R. G. The change agent's guide to innovation in education. Englewood Cliffs: Educational Technology Publications, 1973.

Havelock, R. G. Planning for innovation through dissemination and utilization of knowledge. Ann Arbor: Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, The University of Michigan, 1971.

Maguire, L. M. An annotated bibliography of the literature on change. Philadelphia: Research for Better Schools, Inc., 1970.

Manning, B. A. Recommendations for search and analysis procedures. In W. F. Dossett, J. Farrington, B. A. Manning, D. L. Smith, R. C. Wallace, & D. B. Witzke, DOES handbook, (Decision Oriented Evaluation System for community development training). Prepared for the Office of Education, Information, and Training, State of Texas Department of Community Affairs. Austin, Texas: University of Texas, Research and Development Center for Teacher Education, 1973.

Mason, R. G. "The use of information sources in the process of adoption." Rural sociology, 1964, 29, 40-52.

Miles, M. B. Innovation in education. New York: Teachers College Press, Teachers College, Columbia University, 1964.

Mort, P. R., & Cornell, F. G. American schools in transition, New York: Bureau of Publications, Teachers College, Columbia University, 1941.

Mueller, R. K. The innovation ethic. New York: American Management Association, Inc., 1971.

North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices. How farm people accept new ideas. Ames: Iowa Agriculture Extension Service, Spec. Rept. 15. - RS, 1955.

Robertson, S. T. Innovative behavior and communication. New York, New York: Holt, Rinehart and Winston, Inc., 1971.

Rogers, E. M., & Shoemaker, F. F. Communication of innovations: A cross-cultural approach. (2nd ed.) New York: Free Press, 1971.

Toffler, A. Future shock. New York, New York: Random House, 1970.